

SD Times

SOFTWARE DEVELOPMENT

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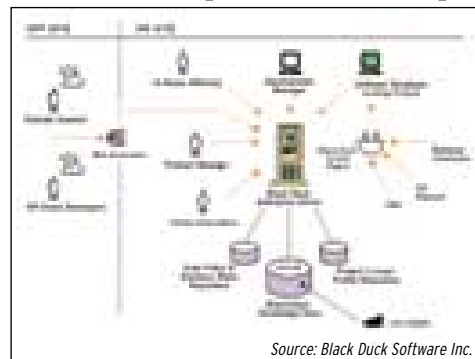
BLACK DUCK ANALYZER SEEKS TO PROTECT IP

BY DAVID RUBINSTEIN

As the practice of combing the Internet for prewritten code snippets grows among developers being asked to create applications faster and with fewer resources, enterprises face

growing risks to their intellectual property.

"There are a number of risks which result, not the least of which is litigation," said Doug Levin, founder and CEO of start-up Black Duck Software



Source: Black Duck Software Inc.

Black Duck's knowledge base is central to the validation solution.

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SlickEdit's Studio IDE Eclipse-Based

Company merges code-editing tools with open-source framework

BY JENNIFER DEJONG

Combining its code-editing technology with the open-source Eclipse framework, SlickEdit Inc. this month is launching SlickEdit Studio v2, among the first Eclipse-based integrated development environments for the general development market.

SlickEdit Studio integrates the company's code editor, Visual SlickEdit v8, with version 2.1 of the Eclipse framework to create an IDE that allows C, C++, Java and other developers to create, edit, build and debug applications more efficiently, said the company's vice president of product management and marketing, Sandy Smith.

Although it is designated as version 2, SlickEdit Studio is the first release of the product, she noted.

The product provides a complete IDE for C, C++ and Java.

It also allows developers to create and edit projects in 47 other languages, including C#, PHP, HTML, XML and COBOL. Although SlickEdit Studio does not include compilers for those languages, you can use other compilers with SlickEdit Studio, said Smith.

Support for multiple languages does not mean the company is positioning SlickEdit Studio against Microsoft's Visual Studio .NET. It is targeting developers currently using Eclipse, as well as those who are considering Eclipse but need the high level of support commercial vendors such as SlickEdit offer, said Smith.

Prior to SlickEdit Studio, the only alternative available to C/C++ and Java developers working in Eclipse was to use C/C++ Development Tools

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Taking on Microsoft 'Mano a Mano'

DotGNU and Mono: .NET replacement projects coming

BY EDWARD J. CORREIA

It looks like 2004 could be the year of .NET replacements. In 2003, two separate open-source projects aimed at compatibility with Microsoft's application runtime reached significant milestones.

Grabbing much of the spotlight was Mono. The ".NET for Linux" project originated by open-source developer Miguel de Icaza gained headlines when host company Ximian was acquired by Novell Inc. A road map published in December promises a long list of major

components to be released with Mono 1.0 by midyear, including a C# compiler, VM with JIT and precompilers and development

Analysts believe that Novell, which also acquired SUSE Linux last year, is now in a good position to regain mind and market share lost to Microsoft in the server and office productivity wars of the 1990s.

Charlie Ungashick, Novell's director of product management and marketing for Ximian Business Services, denies any anti-Microsoft strategy. "Linux desktop adoption is still only around 1 percent and Microsoft is over 70 percent. So it's not feasible for us to spend

time figuring out how to get from 1 to 70 overnight. We need to build a solid foundation with Mono and the Ximian desktop and provide tools and technologies that get us to 5 and 10 percent quickly. We're looking to get that right first."

Far less coy about its intentions is the Free Software Foundation and its DotGNU project, which is developing an open-source implementation of Microsoft's Common Language

Infrastructure intended as a replacement for Microsoft's own. Among the motivations for the project posted on www.dotgnu.org is "a desire to prevent Microsoft from achieving



There's no timetable for a release, says DotGNU's Weatherley.

MOTOROLA TO SPIN OFF METROWERKS, HIRES ZANDER

BY EDWARD J. CORREIA

Communications giant Motorola Inc. in December announced its intention to spin off its Semiconductor Products Sector (SPS) into a separate, publicly traded company. The SPS division includes development tools maker Metrowerks.

Under the transaction, the new company would issue shares of Class A common stock in an initial public offering, after which Motorola will own all shares of the company's Class B common stock. Pend-



Ed Zander becomes new chairman at Motorola.

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Chart FX for .NET goes to 6.2 - Whidbey next

New features 'highlight' latest release with more on the horizon

With the new features included in the latest release of Chart FX for .NET, version 6.2, it's no wonder Software FX has been able to lead the data analysis and charting market for over 10 years.

In version 6.2, Chart FX for .NET shows off more innovative ways to display comprehensive data in a graphical form. Starting with the new 'highlighting' feature, developers can include the ability for end users to highlight individual series and data editor columns when they are moused over. This allows users to easily examine individual points on a chart. Similarly, the new multiple pane view within the same chart allows the comparison of multiple unrelated entities that may share an X-axis.

Also added was improved axis labeling functionality with the introduction of Data Driven Labeling. Automatic labeling has also been introduced, improving the display of Date/Time formatted axes. Developers can also apply specific labels, fonts, colors, grids and backgrounds to particular sections of any axes. Marker attributes can now be changed automatically, based on a given condition. Now

you can configure URL linking from each of the Legend and DataEditor entries, plus new and improved options for attaching, anchoring and clipping annotation objects. Chart FX for .NET 6.2 adds the ability to export your charts in Flash native format. The new Aqua, Butterfly, Gel, Museum and Pulsar borders and Sky, Mesa, Adventure & Vivid color palettes augment the design and color scheme of your charts.

This version sets the stage for the upcoming release that will be compatible for 'Whidbey'. Software FX had originally planned to save many of these features for that release, but decided to offer them to

the developers now instead of waiting on Visual Studio 'Whidbey'.

"Visual Studio 'Whidbey' introduces new technologies that Chart FX for .NET has primary and strategic interest and influence on, such as data connectivity, site management and enterprise deployment. We intend to take full advantage of each of these powerful new features for the benefit of our customers," said Rene Garcia, President and CEO of Software FX. "Even at such an early stage, it is impressive to see the quality, reliability and speed at which developers can implement a robust enterprise data visualization solution with Chart FX for .NET and Visual Studio 'Whidbey,'" concluded Mr. Garcia.

Most notably, Software FX is announcing a series of powerful new server features that will benefit ASP.NET Web Forms developers creating Internet and intranet applications. "Visual Studio 'Whidbey' introduces a whole new set of features that will benefit developers using Chart FX on IIS, more especially on the performance, scalability and security fronts. Similarly, Chart FX supports and natively connects to multiple data sources like data



Chart FX for .NET, version 6.2 will continue to lead the industry in supplying quality data analysis tools.

For more information or to download a full 30-day trial version, visit www.softwarefx.com/cxfornet.

NEW FEATURES IN 6.2

The latest release of Chart FX for .NET, version 6.2, includes some very useful new features, including:

- **Highlighting** - Callout individual points, series and data editor columns as they are moused over.
- **Smart Date Axis Labeling** - Data driven and automatic labeling and date/time formatted axes.
- **Multiple Panes** - Render multiple panes within the same chart to compare unrelated entities.
- **Visual Attributes** - New borders and palettes, conditional marker and axis section attributes.
- **Extended URL Linking** - Configure URL linking from each of the Legend and DataEditor entries.

containers and grid views within Visual Studio 'Whidbey'. That's an advantage that will reduce the learning curve on our products and will ultimately reduce development costs and application maintenance" said Ivan Cagni, Chart FX Product Manager.

Quite often, developers are asked to have data front-end data analysis and reporting solutions integrated to virtually every business aspect. Chart FX for .NET meets and satisfies these needs quickly and cost effectively by providing not only a powerful business charting engine but also featuring powerful extensions that address diverse vertical and enterprise

charting needs. The Chart FX Extensions add specific capabilities or functionality such as Financial, OLAP, Wireless, Mapping, Real-Time and Statistical. With this robust Chart FX product line, Software FX really does fulfill their promise of any chart, anywhere.



10 YEARS
Software FX
Any Chart, Anywhere!

Full brew of Chart FX for Java now available

A robust blend of data visualization and reporting analysis comes to Java platform

Chart FX for Java is a 100% Java component that uses JSP technology to produce charts in a variety of formats: PNG, JPEG, SVG and FLASH. Developed using JDK 1.4, it supports J2EE 1.3 and J2SE 1.4. Chart FX for Java is available as a Server-side Bean and an Enterprise Java Bean (EJB) that runs on most popular Java Application Servers, including IBM WebSphere, BEA WebLogic, Apache Tomcat, Sun ONE, Oracle Application Server, Macromedia JRun and more.

Additionally, Chart FX for Java will produce Active Charts, in the form of, for example, a .NET component, which is a combination no other vendor can offer. This allows developers to exploit the power and reliability of Java-based servers while providing a gratifying and dynamic experience to the greatly dominated Windows desktop environment.

Chart FX for Java preserves the familiarity, ease-of-use, scalability, drill-down capabilities, streaming and auto-browser detection, as well as all the other features developers have come to

appreciate from Software FX.

Included are over 20 different chart types, customizable legends, ready-to-use color palettes, gridlines, multiple and customizable axes, annotation objects, per-marker attributes, background images, image borders and many other visual features. Chart FX allows you to create some of the most visually appealing charts in just minutes with features like gradients, alpha blending, anti-aliasing and transparency.

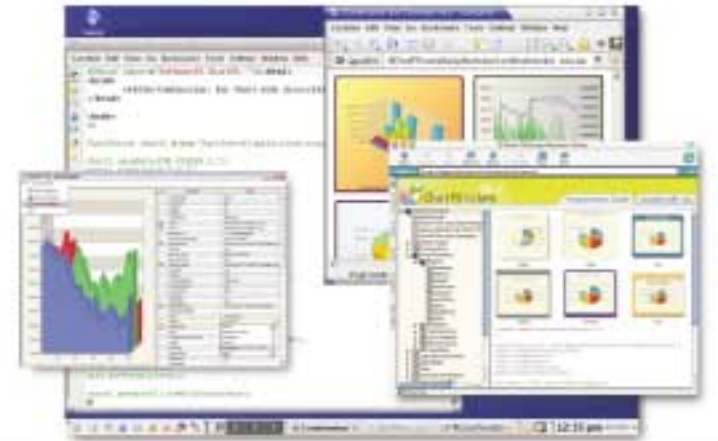
The Chart FX for Java Designer is a stand-alone chart template generator. Using this tool, you can create XML files containing all the visual attributes you desire for your chart. Once you have configured these settings in a familiar design-time environment, you can export the settings as XML and later import them into your charts using the import method.

Charts are easily populated with data through the API, JDBC, XML, Text Files and other popular data sources. And included is the Chart FX Resource Center, which contains the Programmer's Guide,

the Javadoc API and hundreds of samples that can be copied for use.

"10 years of creating quality developer charting solutions gives us an edge over others in the industry," said Robert Williams, VP, Marketing of Software FX. "So, although we're the new kid on this block, we've been in the neighborhood for a long time. The maturity of Chart FX and our support will prove it," added Mr. Williams.

For more in depth information or to download a full 30-day trial version, visit www.softwarefx.com/java.



Develop for any platform only \$299

The **Chart FX Developer Studio** is a collection of developers-only, charting solutions for the COM, .NET and Java platforms, as well as for IDEs such as Visual Studio.NET, Delphi, C#Builder, JBuilder, Sun ONE and WebSphere Studio. Also included in the Developer Studio are the Chart FX Extensions, including OLAP, Maps, Financial, Statistical, Real-Time and Wireless, which add capabilities or

provide a specific functionality. This allows a developer to only include the functionality that is needed and maintain a high level of stability and performance. This collection of non-expiring, full development versions of the entire Chart FX product line into one package makes for a convenient way to develop for different environments and different needs. At only \$299, The Chart FX Developer

Studio helps developers not compromise their budget up front, allowing them to save their larger purchasing power until their solution is ready for deployment.

NEW!
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DEVELOPER STUDIO

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Reference Architecture in the Works

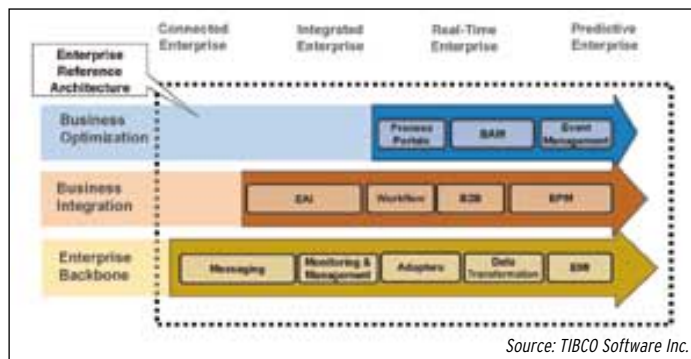
TIBCO spearheads effort on best practices for service orientation

BY JENNIFER DEJONG

Business integration player TIBCO Software Inc. announced last month the creation of the Enterprise Reference Architecture (ERA), an emerging set of best practices designed to help technology vendors and corporate developers move toward service-oriented architectures.

TIBCO is getting help on ERA from Hewlett-Packard Co. and Intel Corp.; the names of eight additional partners expected to join the effort will be announced around the end of the first quarter, said Ed Zou, TIBCO's general manager for business integration. But he acknowledged that Borland Software Corp. and Siebel Systems Inc. are likely to be among them.

The ERA blueprint will be published and maintained by



ERA seeks to help developers break down applications into components.

research firm DocuLabs Inc. (www.doculabs.com), which will serve as a neutral third party, ensuring that the ERA does not become "TIBCO-centric" said Zou.

Zou said that the ERA will map out a new way for developers to think about integration. It will provide a blueprint

that specifies how to "decompose" applications into their components and make them available in a repository, he said. For example, instead of figuring out how to connect a Java application to SAP, developers would simply expose "order taking" as one of the functions. The developer will

not need to know where the information for that order resides. "We are moving into a higher level of abstraction, where instead of writing code, you are manipulating metadata," said Zou.

The first iteration of the ERA, published in a white paper on TIBCO's Web site (www.tibco.com), provides a conceptual framework, describing five characteristics of modern enterprise architectures: service-oriented; event-driven; aligned with life-cycle support processes; able to support assembly and integration; and able to leverage existing applications and infrastructure.

As the ERA evolves, the specification will provide more concrete information, said Zou. For instance, it will spell out

how companies can actually implement existing specifications such as Web Services Management Framework (WSMF) and Data Center Markup Language (DCML), said Zou, noting that the ERA is not expected to create new standards. Hewlett-Packard is shepherding the WSMF project, while the DCML effort has been embraced by 37 companies, although major players HP, IBM, Microsoft and Sun are not supporting it.

At the end of the day, it's about making the different pieces work together and creating an enterprise architecture that lasts, said Zou. "The other thing we believe is that this will help the Java and .NET camps, which are at war with each other, to work together more easily." ■

Shakeout Seen in Web Services Market

Securities firm expects demise of smaller players in 2004

BY YVONNE L. LEE

Web services specializations will begin to disappear in 2004 as the larger development companies swallow up the smaller fries, according to merger and acquisitions adviser Martin Wolf Securities LLC.

"We think there will be less than a handful [of specialist firms remaining]," said founder and president Martin Wolf. "There will be three or four transactions of note, and the rest will go away or they'll have to transmogrify themselves into something else."

In a qualitative report of the Web services field, the firm identified BEA, Borland, IBM, Microsoft and Sun as the big fish that will seek to acquire smaller firms in the areas of Web services security, management and development tools. Oracle analyzed the field and decided it would build its own specialty applications, said associate managing director Scott Messier.

Which companies become acquired or otherwise remain afloat will depend on the partnerships and integrations they form with the larger firms, said Messier.

"Blue Titan has integrated its product line with BEA," said Messier. "AmberPoint's very

tight with Microsoft, but what's smart about what AmberPoint's doing is they're playing both sides of the fence. They're close with IBM as well." He said companies that integrated with more than one development system would have greater leverage during negotiations and identi-

fied Actional, AmberPoint, Blue Titan and Confluent as having the strongest position.

Martin Wolf Securities admits to representing a Web services firm that is seeking to sell itself, although neither Wolf nor Messier would disclose the firm. Martin Wolf Securities'

Web site lists confidentiality as a service to its clients. The company's predictions should be interpreted in light of this potential conflict of interest.

The Web services study compared the anticipated shakeout with a similar contraction in Web portals, where such software

became a part of the major vendors' suites; Martin Wolf said that only Plumtree Software Inc. remains of the more than 80 pure-play companies that were around at the niche's zenith in the late 1990s.

The survey concluded that Web services will be engulfed by the enterprise software niches of systems management, overall application development and integration. Those three sectors have already experienced significant consolidation. ■

JOCKEYING FOR POSITION

A report on Web services by Martin Wolf Securities LLC takes a look at the "big fish" in the market:

	MARKET POSITION	RECENT DEVELOPMENTS
MICROSOFT	<ul style="list-style-type: none"> • The default Web services leader, with its undisputed ownership of .NET • Visual Studio .NET is highly regarded as the easiest and quickest Web services product 	<ul style="list-style-type: none"> • It is now possible to use .NET with most other toolkits on the market • Visual Studio .NET still has several limitations, including its dependence on Microsoft products, inability to port services to a non-Windows operating system and inability to accept Java code
IBM	<ul style="list-style-type: none"> • Primary J2EE-based provider • WebSphere brand now comprises dozens of products, several of which are alternatives to one another 	<ul style="list-style-type: none"> • More than 150 software tool suppliers, and over 1,200 developers from 63 countries contributed to the codebase of Eclipse, IBM's open-source framework released in November 2001 • Donates source code to the Apache Software Foundation
SUN	<ul style="list-style-type: none"> • Closely involved in the invention of XML in 1996 and recognized early the importance of XML as a data format complementing Java • It has been a struggle for Sun to avoid being perceived as the one major vendor holding out against Microsoft's .NET 	<ul style="list-style-type: none"> • Competes with IBM for the position of primary J2EE-based provider • With the formation of the Open Net Environment (ONE) brand last year, it shows signs of climbing back into the ring
BORLAND	<ul style="list-style-type: none"> • Undisputed leader in Java and Linux development tools and No. 2 in Windows • Continues to straddle Java, Linux and Windows with ease • Offers unparalleled choice of platform 	<ul style="list-style-type: none"> • Claims to be first vendor to launch rapid application development (RAD) for Web services • Provides first alternative development tool for .NET Framework besides Visual Studio .NET • Acquisition target given its market capitalization
BEA	<ul style="list-style-type: none"> • WebLogic Server is regarded as on par with IBM's WebSphere and has received much publicity lately • Written as a pure Java product from the start, WebLogic tends to implement the latest JCP specification several months ahead of WebSphere 	<ul style="list-style-type: none"> • WebLogic Platform 8.1 makes it easier to create Web services backed by J2EE components • Map Editor, an innovative helpful feature, translates between XML and Java

Source: Martin Wolf Securities LLC

News Briefs

PRODUCTS

TimeSys Corp. has ported its **Linux RTOS** operating system and SDKs to Intel's XScale-based I/O processors . . . Version 2.0 of **GpsTools**, a set of ActiveX and .NET components from Swedish firm Franson.biz, provides access to global positioning system data, and can convert between different coordinate systems. New to this version is a feature that lets the US\$49 software connect GPS data to an application's raster maps . . . Compuware Corp. has ported its **DevPartner** debugging and automated error detection suite to Intel's Itanium 2 and AMD's AMD64 64-bit architectures. DevPartner64 1.0 comprises two tools: **Visual SoftICE**, a software-based in-circuit emulator, and **BoundsChecker 64**, which analyzes runtime errors, including memory leaks and deadlocks. The software costs US\$1,999 per seat . . . Metrowerks has updated its **CodeWarrior Development Studio** to work with Mac OS X 10.3. CodeWarrior 9.1 works with C, C++ and Objective-C, and costs US\$499 per seat . . . dtSearch Corp. has enhanced its namesake text search and retrieval tool.



dtSearch 6.3 includes faster algorithms and has a new Language Analyzer API to let developers integrate third-party text analyzers and dictionary-based tools into the indexing engine . . . Merant Inc. has introduced **Manage**, a tool that offers document management and version control for Microsoft's Office 2003 . . . LogiXML Inc. has updated its **IgxReportDev** report generator to be compatible with the MySQL open-source database . . . BEA Systems Inc. has committed to porting its **WebLogic** server platform to Solaris x86, with delivery by mid-2004 . . . Pegasus Imaging Corp. has updated its **MedXPress** imaging toolkit for DICOM, the Digital Imaging and Communications in Medicine data interchange specification. Version 2 has a new object-model API, support for DICOM-specific data associations and networking protocols, and new image-capture capabilities . . . Version 3.0 of **RadiantOne**, a virtual directory server from Radiant Logic Inc., has new features for integrating heterogeneous identity databases to create a single LDAP-compliant identity management system . . . Capitalware Inc. is offering **MQ Visual Edit 1.0**, a tool that lets users view, edit, insert and delete messages from the queue of a WebSphere MQ or MQSeries queue manager. The software costs US\$99 per user . . . Vitria Technology Inc. has updated its **BusinessWare** integration software. Version 4.2 handles so-called business process fusion, which Vitria calls the merging of multiple transactional processes that have already been automated . . . Swiss firm Canoo Engineering AG says it will have a version of its **ULC Visual Editor**, a Java GUI designer, available as an Eclipse plug-in by the second quarter of 2004 . . . Wily Technology Inc. has introduced **PowerPack for BEA Tuxedo Connectors**, which lets its Introscope performance monitoring tools carry out component-level measuring within BEA's Tuxedo and Jolt integration suites . . . PrismTech Ltd. has announced **OpenFusion Notification Service/JMS Bridge**, which is designed to link EJBs to non-Java application servers, whether or not they are CORBA compliant . . . Expand Beyond Corp. has updated its **PocketAdmin** tool for monitoring Windows server performance. PocketAdmin 2.3 lets wireless PocketPC devices manage remote servers in real time . . . **Visible Developer 3.3**, a VS.NET code-generation plug-in from Visible Systems Corp., now supports .NET Remoting and User-Defined Code Patterns. Visible Developer, which costs US\$1,995 per seat, generates three-tiered VB.NET and C# code from application and data models . . . Vordel Ltd., a tools company based in Dublin, Ireland, is offering **SOAPbox**, a free tool for testing Web services security against the SAML and WS-Security specifications . . . Edinburgh, Scotland-based Runtime Revolution Ltd. has updated its cross-platform IDE, **Revolution**, to version 2.1.2. The maintenance release improves Mac OS X compatibility.

PEOPLE



Jennifer deJong joins SD Times as senior news editor; deJong has been a contributing editor since 2000 . . . Test-tools maker Klocwork Inc. has hired **Michael Laginski** as SVP of sales and marketing. Previously Laginski was president and CEO of LumaPath Inc. ■

OSDL: Scalability Up, Hardware Costs Down in Linux Kernel 2.6

BY EDWARD J. CORREIA

Two major improvements delivered with the Linux kernel 2.6 can be described in billions: 4 billion unique users and groups, up from 64,000 in kernel 2.4; and 1 billion process IDs, up from 32,000. But according to the Open Source Development Labs (OSDL), where much of the work on the new kernel is taking place, ascension of other scalability features will more directly contribute to the enterprise's bottom line. Kernel 2.6 was declared stable by Linus Torvalds in December.

Stacey Quandt, OSDL's principal analyst, said three major enhancements will help the enterprise lower costs by easing migration of Unix applications to Linux and by reducing the hardware necessary to run them.

Quandt said that with enhancements to threading capabilities and support for 64-way processing, 2.6 now offers developers a migration platform more analogous to Unix. "For people who have a Unix-to-Linux migration strategy, it increases the number of highly threaded and scalable applications that can be

ported. Any developer that targets those workloads will now be able to use Linux for those applications," she said. Such applications might include financial services, digital content creation, databases and rendering engines, she added.

Quandt said Linux will help improve ROI by taking advantage of SMP increases to set up 32-bit multi-processor systems that are far less expensive than their 64-bit counterparts running Unix. "You can consolidate applications on a higher-performance server that may have fewer processors. Running on [64-bit] Itanium is more expensive than on low-end 32-bit architecture."

Also significant is support for Non-Uniform Memory Access, or NUMA, an SMP technique akin to clustering that Quandt said is more efficient than the older Beowolf method. The difference between NUMA and Beowolf clusters, she explained, is that NUMA uses shared memory space and a single administrative

image, which she said "simplifies decomposition of large jobs on a cluster. With a Beowolf cluster, you need to share data between multiple nodes, which requires multiple I/O operations."



Linux is now more suitable for compute-intensive apps, says OSDL's Quandt.

NUMA also minimizes contention for the memory bus by ordering groups of processors and memory into nodes, and permitting communications via high-speed interconnect.

Several major vendors already have released distributions incorporating various parts of the 2.6 kernel, including LynuxWorks and MontaVista. Red Hat recently launched Red Hat Linux 3.0, a 2.4-based distribution that incorporates a few but not all 2.6 features that are beneficial to enterprise customers, Quandt said. And, before its acquisition by Novell, SUSE Linux began shipping a test version of kernel 2.6 in October as part of its SUSE Linux 9.

The stable Linux kernel 2.6 can be downloaded at www.kernel.org. ■

Kodo 3.1 to Get JMX

BY EDWARD J. CORREIA

SolarMetric Inc. this week was scheduled to support the Java Management Extensions (JMX) in Kodo 3.1, the latest version of its object-relational Java persistence tool that the company says also will include a console for managing connections, caches and other aspects of databases and systems.

An early version of the console was included in Kodo 3.0.1, released in late 2003, which also sported a graphical user interface and incorporated features of the Java Data Objects 2.0 specification, which could be released later this year.

The most significant of the new JDO 2.0 features, according to SolarMetric president Neelan Choksi, is its so-called attach/detach function. "If somebody is pulling up database information either through a Web form or client/server, it

allows you to make sure nothing has changed between the time you retrieved the information and time you're trying to save it back," he said, resulting in more reliable transactions.

The alternative, he continued, is to calculate programmatically when to cut and re-establish the database connection. "A lot of our customers were writing that stuff on their own. Using attach/detach, Kodo 3.0 now does all of that for you automatically." Other new JDO 2.0 features built into Kodo include advanced reporting and the ability to perform direct SQL statements and stored procedures through the JDO query API, of particular benefit for migrating projects that need query logic to remain unchanged. Choksi also claimed performance improvements.

Choksi said Kodo 3.0's object-relational mapping engine can

now handle more complicated mappings through support for recursively embedded relations, translation of Java field values to different database values, and improved customization for mapping to legacy schema. "For instance, a developer may [need to access] a legacy database that's been there forever, and they have no ability to add to or change the table structure."

Choksi characterized the waiting periods often associated with the JCP as inordinate, hence the decision to implement JDO 2.0 features in advance of the spec's release. JDO 2.0 will likely not be sent to public draft, the first stage of the Java Community Process, for at least three to six months, he said.

Kodo 3.0 Standard Edition, for stand-alone apps, costs US\$600 per developer seat. The Enterprise Edition, for J2EE server apps, costs \$3,000. ■

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WEBINAR EVENT: WEB APPLICATION SECURITY



Featured Speaker:
*Andrew Binstock -
Contributing Editor SD Times*

Andrew Binstock is a contributing writer for SD Times and president and principal analyst of San Carlos, Calif.-based Pacific Data Works LLC. Andrew writes SD Times' "Integration Watch" column.

EVENT: Web Application Security:
Attacks and Countermeasures

FEATURED SPEAKER: Andrew Binstock

FEATURED INSTRUCTOR: Keith Brown

DATE: January 28, 2004

TIME: 11:00 AM PST



Featured Instructor:
*Keith Brown
Instructor - DevelopMentor*

DevelopMentor instructor Keith Brown specializes in application security. Keith authored the book *Programming Windows Security* (Addison-Wesley, 2000), and co-authored the book *Effective CDM* (Addison-Wesley, 1998).

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DreamFactory Delivers Services GUI Builder

BY YVONNE L. LEE

DreamFactory Software Inc. this week is delivering DreamFactory 6.0, a Web-based front-end builder for creating aggregate applications from Web services found around the Web and delivering them as Web services.

"Our goal is to let a human interact with XML Web services at the edge of the network," said CEO and chief scientist Bill Appleton. "What DreamFactory's all about is connecting XML Web services to user interfaces." The entire project is in a single file, so it's incredibly easy to deploy, he claimed.

Delivered as a browser plug-in, DreamFactory 6 tools include a project manager, a utility palette and an alignment palette. The utility palette contains all the tools for opening, closing, saving, compressing, running and debugging projects, as well as for opening other DreamFactory palettes.

Projects can be deployed from within a Web page or as stand-alone applications. Deploying an application

requires a certificate that verifies the user has purchased a license. Pricing for the certificates varies depending on how widely deployed the project will be. Every company deploying DreamFactory will need to negotiate a separate contract with the Los Gatos, Calif., company.

Although the product is designated 6.0, it is actually the first generally available version of the product, which began beta testing last March, said Appleton.

"The versioning is really causing some confusion," he said. "It's driven internally by our development. Maybe versioning should be taken over by the marketing group instead."

DreamFactory 6 plug-ins work with Netscape, Internet Explorer and Mozilla browsers on Windows and Mac OS; it has been tested with Web services deployed from BEA's WebLogic, IBM's WebSphere and Microsoft's .NET servers; there is no server component to the DreamFactory software. ■



DreamFactory's drawing tools, project console and utility palettes work from within a browser.

Intel Compiles to 'Prescott'

BY ALAN ZEICHICK

Intel Corp. has updated its C/C++ and Fortran compilers, adding new tools to help developers optimize applications for its forthcoming generation of microprocessors, code-named "Prescott." The company has added a third target platform to its compiler list—in addition to Linux and Windows, the new version 8 C/C++ compiler can target Microsoft's Windows CE .NET running on Intel's XScale processors.

The version 8.0 compilers continue to support Intel's 32-bit x86 processors and 64-bit Itanium 2 processors. According to Intel, the Prescott processors, due in the first half of this year, will be the next generation of the Pentium 4 processor, and will contain new instructions for hyperthreading and multimedia operations, which will be presented as extensions of SSE2 (Streaming SIMD

Extensions 2). More about the "Prescott New Instructions" can be found at www.intel.com/cd/ids/developer/asmo-na/eng/43988.htm.

A major change with the version 8.0 Fortran compiler is that Intel has incorporated features of Compaq Visual Fortran on top of the ANSI-standard Fortran language, which the company says makes it the first time those extensions are available on both 32-bit and 64-bit Windows systems.

Intel has bundled two new tools with both the Linux and Windows compilers. The Code Coverage Tool identifies how much application logic is used, and where the unused code resides in the source. The Test Prioritization tool is used to speed test time using the Code Coverage tool.

The Intel compilers are priced at US\$399 per language or platform. ■

PeerDirect Mobilizes the Enterprise

BY EDWARD J. CORREIA

If you've been manually modifying your applications to cope with network outages, a pair of new products from PeerDirect Corp., a division of Progress Software, may offer relief. According to company claims, its Mobilized Enterprise, released in late 2003, and Remote Enterprise, due out this week, offer developers a means to modify data-driven applications so they stay functioning and up-to-date even if data sources are remote or disconnected.



PeerDirect helps apps go on- and offline gracefully, says Lorion.

Brit Johnston, PeerDirect's CTO, said that developers have had a difficult time adapting their applications to handle changes in network availability. "We can take the whole or partial data set and place it in a mobile device," with less cost and complexity than application frameworks and other competitive solutions, he claimed.

Mobilized Enterprise and Remote Enterprise are built on PeerDirect's Distributed Enterprise middleware for Linux, Unix or Windows servers that Johnston said combines data and file synchronization, application deployment and management components. Both work with major databases, including those from IBM, Microsoft, Oracle and Sybase.

The Remote edition is designed for large, geographically dispersed organizations, such as insurance companies whose satellite offices each need a different subset of the company's main database. "We make it easy to determine what that subset is going to be and manage it from a centralized point, all without having to modify the application."

The Mobilized edition is designed for applications that will be frequently disconnected from the network, such as those on the laptops of field service or sales workers. According to Mark Lorion, director of product management, those applications must be modified to avoid problems such as duplicate customer ID numbers or global unique identifiers. "They need to be

made aware that they are operating in a distributed environment. If you have unique identifiers for objects, the parts of code that create those need to create unique values."

The process is made simple,

Lorion claimed, by means of a design tool that he said developers use to point to their existing application and create a so-called replication schema. "You then build the appropriate knowledge needed to slice and

distribute that data, and define areas that need to support global unique identifiers."

The Mobilized edition also includes an agent that, according to Johnston, makes applications mobile-aware to keep

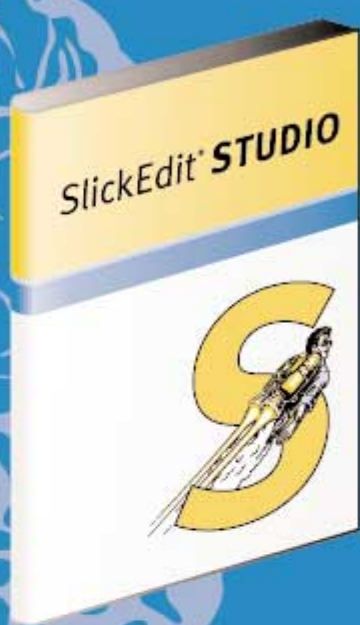
them functioning when a network connection is lost; it also knows what to do once connectivity is restored.

Mobilized Enterprise is available now; pricing varies by volume starting at US\$150 per mobile user. Pricing for Remote Enterprise starts at \$1,100 per remote server. ■

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Universal Business Language Goes Into Testing

OASIS seeks single vocabulary for documents crossing industries

BY YVONNE L. LEE

The Organization for the Advancement of Structured Information Standards (OASIS) released the Universal Business

Language into beta test in early December. UBL is an XML variant designed to process common instructions across vertical industries.

If the test, scheduled to run through February, goes well, the final version should be out this spring, said Jon Bozak, distinguished engineer at Sun Micro-

systems Inc. and technical chair for the UBL committee.

UBL seeks to establish a single vocabulary for what OASIS calls the "payload," or content of

documents, such as purchase orders and invoices exchanged in conducting business. UBL works with ebXML, which specifies how the messages are passed, stored and identified.

The language is useful for when organizations deal with trading partners outside their industries, such as those in the automotive industry ordering computer chips or those in the microprocessor industry ordering solvent, Bozak said.

"We've spent two years constructing a set of schemas that we believe will do the job for a large set of ordinary business transactions," Bozak said. "But we can't know for sure until some real business software developers implement some UBL applications and some real business users try them out. That's the purpose of the implementation review." UBL is a royalty-free specification that organizations can download from www.oasis-open.org.

Bozak said the technical committee is expecting much comment during the beta test, but if it goes smoothly, the first release of the draft will be available in April or May 2004.

DISEASE-CONTROL DEMO

In related news, at XML 2003 in Philadelphia, Adobe, Cyclone Commerce, NIST, Sun and others demonstrated an end-to-end data transmission process using OASIS' specifications for ebXML Registry, ebXML Messaging, ebXML Collaboration Protocol Profile and Agreement (CPP/A), ebXML Business Process Specification Schema (BPSS), Security Assertion Markup Language (SAML), Extensible Access Control Markup Language (XACML) and UBL.

According to OASIS, in the demo, a public health-care entity for disease control used a registry to manage epidemiological data. Laboratories, emergency rooms and airports sent reports on persons that may be carrying communicable diseases to the registry. A scientist who declared an epidemic by electronically filing a communicable disease form monitored the reports. Hospitals were electronically notified of the situation. At one hospital, a software agent automatically followed a protocol specific to the disease and ordered supplies for treatment. The demonstration concluded with the appropriate supplies being successfully delivered to the facility. ■



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Grand Central Acts as Process Terminal

Network provider offering BPEL scripts, integration solutions as services for developers

BY DAVID RUBINSTEIN

At the height of the Web services hype in 2001, Grand Central Communications Inc. tried to capitalize by creating a network that it said took care of all the end-point connections between disparate message systems and application types.

Now, as interoperability and security issues are being tackled by standards organizations, Grand Central is switching tracks and using its Business Services Network to offer business processes as services beginning this month.

A new client front end called Process Express allows developers to sort through business-process services catalogs hosted on the network by category or by service provider, for example, and choose what they want to incorporate into their solutions, said Byrne Reese, director of product management. "In time, because of traffic flowing over the network, we plan on including usage patterns and histories, service-level agreement compliance and failure rates" among the Web services descriptions available to developers. "We want to build trust between the service provider and the developer," he explained. The Process Express interface was developed in partnership with rich-client GUI tool vendor DreamFactory to give the network a desktop application look and feel.

With founder Halsey Minor back in place as CEO since June 2003, the company has been seeking a way to make the platform more usable. "We want to make integration about assembly and configuration rather than code," Reese added.

Grand Central also has a BPEL Resource Center on its grandcentral.com/developers Web site, where developers can learn about the Business Process Execution Language and upload BPEL scripts for use by others.

Grand Central will charge users for the traffic they put through the network, lowering the bar of entry to networking for smaller companies that make large investments in infrastructure to partner up with a small group. "Now you don't have to spend millions to build a network for a small number of partners," he said. "What you want to scale is the network, not

your own system. You don't have to now support more protocols and connections, or hire people to keep the network up and running 24/7."

John Linney, vice president of products, said the company also has had inquiries from organizations that want to license the network and give it their own

identity, so it appears to partners as if the network is solely their own. Users cannot control displays of service categories on the public network, though. Tools re-

leased along with the product can be used to mirror the directory on a Web server; once the directory is on the server, a licensee can control how to display it. ■

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Microsoft Announces Beta of Host Integration Server 2004

BY JENNIFER DEJONG

In a move designed to encroach on IBM's mainframe turf, Microsoft Corp. announced last month the beta availability of Host Integration Server (HIS) 2004, the latest version of its server, which enables enterprise developers to connect more easily from Windows to data and applications on existing IBM mainframes and midrange AS/400 systems.

While the previous release

of the server, HIS 2000, was based on earlier COM technology, HIS 2004 is based on .NET. It is directly integrated with Visual Studio .NET 2003 and uses XML Web services to access legacy data, said Paul Larsen, group program manager for Microsoft HIS.

Other features new to the 2004 release include support for high-performance routing over IP (HPR/IP), which simplifies the task of connecting to

IBM mainframes that still use the older networking protocol SNA; .NET-enabled data providers for the IBM DB2 database, which enable direct access to DB2 mainframe data; and support for SSL and TLS.

Meanwhile, IBM Corp. last month released WebSphere Host Access Transformation Services version 5 for making IBM 3270 and 5250 apps available as HTML code in Web browsers.

Microsoft's HIS 2004 provides an enhanced version of Transaction Integrator (TI), which uses Web services to "wrap" IBM mainframe or AS/400 applications as .NET client components.

HIS 2004 uses wizards to guide developers through the process of creating the wrappers as well as other processes involved in integrating legacy data. "You don't need to know much about COBOL or about networking," Larsen said. HIS 2004 also allows developers to initiate connections from the midrange or mainframe host, not just from Windows, he added.

Noting that some 70 percent of enterprise applications still run on midrange and mainframe computers, Larsen said that the new HIS capabilities are significant because developers find the existing options to Web-enable legacy applications, including the use of IBM's Java application server WebSphere, inefficient. "Do you modify the [legacy] application and extend it? Do you take a COBOL application

and rewrite in Java," he said, referring to the questions facing enterprise developers. HIS 2004 lets you "leave the mainframe application alone and add functionality using the new Transaction Integrator," he said.

The final version of HIS 2004, part of Microsoft's Windows server system, is due the middle of this year. Microsoft has not yet announced pricing and licensing for the product, a company spokesperson said. Nor has it said whether HIS 2004 will become part of the company's Jupiter bundle of servers. Jupiter, which includes BizTalk, Content Management and Commerce Server, is slated for release in 2005.

Microsoft also announced last month that the per-processor pricing for the BizTalk server, which will ship early this year, will remain unchanged from the 2002 version: enterprise edition, US\$25,000; standard edition, \$7,000; and partner edition, \$1,000. The developer edition, for development and testing purposes only, costs \$750 per user. ■

SHUNRA KICKS UP STORM WITH TEST LAB UPDATE

BY DAVID RUBINSTEIN

Shunra Software Inc. has announced the availability of version 3.1 of Shunra/Storm, its test lab solution, that now allows complex test scenarios to be stored in a repository for reuse.

Shunra/Storm allows organizations to emulate everything in their network systems that is external to the data center, as well as replicating end-user transactions from remote locations. "You can really test a business application, testing it under different conditions,"

said Boaz Grinvald, one of the founders and chief of U.S. operations for Israel-based Shunra. "The key thing we address in 3.1 is to go back to these test scenarios and run an upgrade of the previous application and compare apples to apples."

Shunra/Storm 3.1 also provides automation capability for users to run multiple, complex tests over a night or a weekend and file the results to the repository for later review, Grinvald said.

The update also features a "significantly enhanced" console, Grinvald said, that ties in more third-party testing and load-balancing tools and allows for the collection of data from those tools into the Shunra repository. Also, there is a new ability to emulate users who are using Web-based applications to get to the data center, Grinvald said.

Shunra costs about US\$40,000 per test setup, depending upon the size of the test lab, Grinvald said. ■

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MONO

◀ continued from page 1

monopolistic control of 'webservices,' which might be similar to how around the end of the twentieth century they had effective control of 'the desktop.'" The group released DotGNU 0.1 in November 2003, including functional runtimes for Linux, Mac OS X, Unix and Windows.

Among DotGNU's leading contributors is Rhys Weatherley, who in January 2001 began development of Portable.NET, which merged with DotGNU in July of that year and is now one of its three primary projects. The DotGNU project also includes DGEE, a Web services execution environment; and phpGroupWare, a Web-based collaboration suite.

Weatherley would not put a release date on a version 1.0, but did state his objectives for the coming year, which include completion of the runtime engine, C# libraries, compiler and build tools. "My big goals for 2004 are to complete the fundamental infrastructure,

System.Windows.Forms under Xwindows, and GNU Compact .NET Framework," the latter of which he said is currently running well on Compaq's iPAQ and Sharp's Zaurus Linux-based handheld computers. Weatherley said Portable.NET would likely be updated to 0.6.2 this month, including "significant improvements to System.Windows.Forms," user interface classes.

A RUNTIME IS A RUNTIME
Despite their similarities—both are developing portable .NET replacements using CLI specifications submitted by Microsoft to ECMA, and both are intended to run .NET apps unchanged—DotGNU and Mono have differing objectives, insisted Bradley Kuhn, executive director of the FSF. "Mono was done by Ximian, which is now owned by Novell,

so it has much more of a corporate flavor to it. They offer different projects with different goals and ways of getting things done. We're making sure developers actually get a free replacement for C#," he said. Ungashick would not comment on the possibility of fee-based versions of Mono down the road. "Mono is an open-source project, and we haven't made any public statements about what will happen in the future," he said. Defending the corporate development methodology, he added, "Developers need a road map that usually accompanies a commercial project that gives them a comfort level with how often the APIs will move and how stable the builds will be over time. Mono is pure open-source today, and people can download daily builds. But the road map gives developers

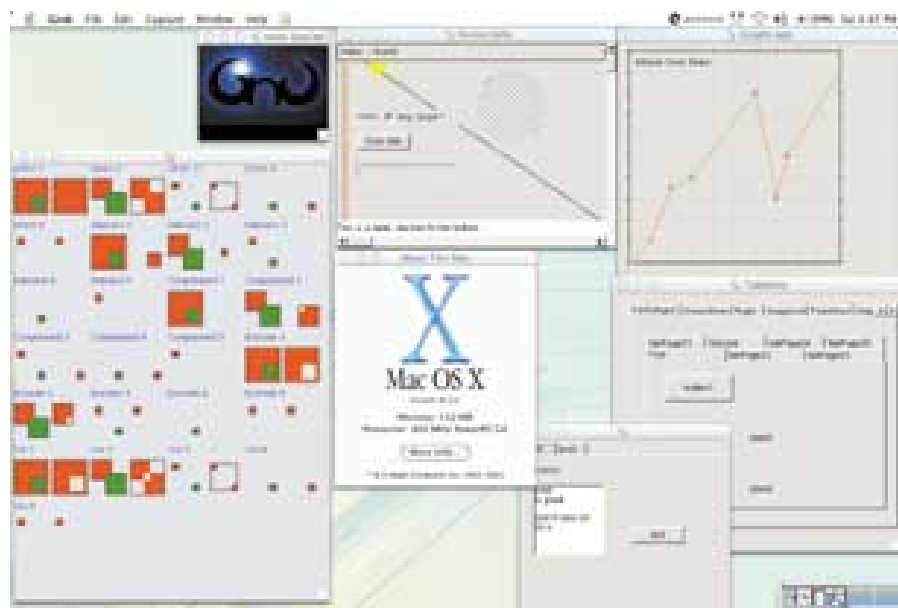
certain points over the next 24 months [when] there will be stable builds that deliver key functionality with solid APIs."

Conversely, it was evident that Weatherley was free of such corporate demands when pressed for a release date. "I'm notoriously bad at predicting timetables. It really depends on what users want. 1.0 will be the name of the most stable and complete release sometime in the future. It would be silly to put a date on it; it will be ready when it is ready."

He added that C# will be the first language supported, followed by C. "Then probably JavaScript and finally [Visual Basic]. This order reflects my own personal interests."

The DotGNU and Mono projects also differ technically.

According to Kuhn, de Icaza "wrote Mono from the ground up in C#. That meant he had to bootstrap with Microsoft's C# compiler system. DotGNU was written entirely in C. Developers who are used to C and the GNU toolchain can continue using them; they don't have to learn C# to get involved in the project." ■



Above are examples of DotGNU implementations of Microsoft's System.Windows.Forms user interface classes running on Mac OS X.

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Web Services on Wall Street Unites Java, XML Events

BY YVONNE L. LEE

The 2004 Web Services on Wall Street conference will combine Lighthouse Partners Inc. and Flagg Management Inc.'s previous Java, XML and Web services events under a single roof, giving IT managers in the financial markets, and vendors with which they work, a single business-to-business setting.

While the technology showcase will feature vendors, many of the sessions will be led by those involved in creating and using Web services within the financial industry.

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The conference will focus on the core technologies that financial markets are adopting as they explore new business

opportunities and re-engineer existing systems, according to Lighthouse Partners.

This conference and technology showcase exhibition, to be held Feb. 3-4 at the Metropolitan Pavilion in Manhattan, is scheduled to offer Web services standards status reports, discussions of the future of industry-specific XML protocols, real-life case studies of Web services and XML adoption in the financial markets, discussions of Web services deployment, security, performance and management issues, a talk about implement-

ing Java and .NET Web services in a heterogeneous environment, and talks on how Web services underpin grid computing, business process management and business activity monitoring.

The event's producers anticipate a total attendance of about 1,150 at the two-day event, with about 250 paid attendees and 900 coming for the free technology demonstrations, said Jennifer Massing, a spokesperson for Lighthouse Partners.

Massing said the group had 40 exhibitors signed up for the showcase, which runs from 4 p.m. to 6 p.m. on Tuesday with a reception and will reopen on Wednesday morning with a refreshment break.

Computer Associates International Inc. CTO Tom Lipton will kick off the show by leading a panel update on Web services standards. Other panelists include IBM Corp.'s Tom Glover, who is also chairman of the board for the Web Services Interoperability Organization (WS-I); Michael Haney, a senior analyst in Celent Communications LLC's securities

and investments group; Dale Waldt, who provides independent program development consulting for the Organization for the Advancement of Structured Information Standards (OASIS); and Steve Ross-Talbot, chair of the W3C's Web Services Coordination Group.

Wednesday will feature five breakout panels, all of which are run by corporate practitioners. The only breakout not led by a practitioner will be a forward-looking session on the Extensible Business Reporting Language (XBRL), which is scheduled to be led by Rob Blake, director of emerging technologies for Microsoft's finance group.

XBRL is a royalty-free XML-based language that's being jointly developed by a consortium of more than 200 companies to provide a common platform for business reporting processes and communicating financial data.

Keynote speakers had not been finalized at press time, but the group did say that the speakers would not be vendors but members of the financial industry. ■

BLACK DUCK

< continued from page 1

it either are asleep or in denial."

One of the biggest issues, Levin said, occurs when software created under the GPL and similar licenses is combined with proprietary software. All the resulting code, including proprietary portions, must be made available to the public. Levin, who was the former head of worldwide licensing at Microsoft Corp., said the Black Duck software can protect enterprises from licensing issues being introduced into outsourced development projects, as "developers in outsourcing companies feel even freer about the use and borrowing of open-source software," Levin said.

At the heart of the Black Duck solution is its knowledge base, which Levin explained contains extensive details about open-source licensing rules, which the company's Code Analyzer software calls upon during the review phase to verify that the code does not violate any licenses. Black Duck

Enterprise Edition can be used with source-code management tools adhering to the CVS standards as well as with Eclipse tools, Levin said.

The knowledge base is updated with new open-source licenses to keep the data as current as possible, Levin said. There are some 45 open-source licenses authorized by the Open Source Initiative (www.opensource.org/licenses), and another 15 or so that are also in use, he claimed. In addition, Black Duck provides users with information regarding the potential results of combinations of applications, licenses and code, and with best practices for bringing open-source and proprietary code together, Levin said.

Companies can use the Black Duck policy module to impose their own rules on the use of open-source software, such as to generate a warning any time GPL code is brought into a project. "If a corporation has rules against using open-source code, we can detect that and certify the code is either open-source-free or includes

open-source with the proper licenses in place," Levin said.

For ISVs, Black Duck includes a Project License Profile that describes all open-source licenses that are in use and all the restrictions, limitations and economics of the proposed package, Levin added.

Black Duck Enterprise Edition has yet to be priced by the company, which was started in December 2002 and is headquartered in Chestnut Hill, Mass. ■

SLICKEDIT

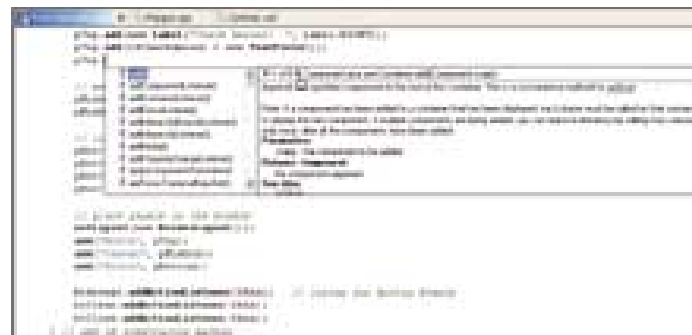
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(CDT) and Java Development Tools (JDT), which according to Smith provide only basic code editing functionality.

By contrast, SlickEdit Studio provides customizable views, context tagging, code completion with author lists and Javadoc comments, difference editing and three-way merging, among many other editing features. It also provides capabilities, such as auto build and graphical debugging, that extend beyond the traditional definition of code editing, said Smith. "A developer's job is complex, and SlickEdit Studio helps them code faster."

She also noted that SlickEdit Studio allows developers to import and extend projects created in CDT and JDT.

Context tagging frees developers from having to remember valid variables and symbols. "You place the cursor over a symbol and a list of valid variables automatically appears," explained Smith. "Javadoc comments provide developers with additional information to make sure they have selected the right parameter," she said.



Advanced editing features in SlickEdit Studio include context tagging, and code completion with author lists and Javadoc comments.

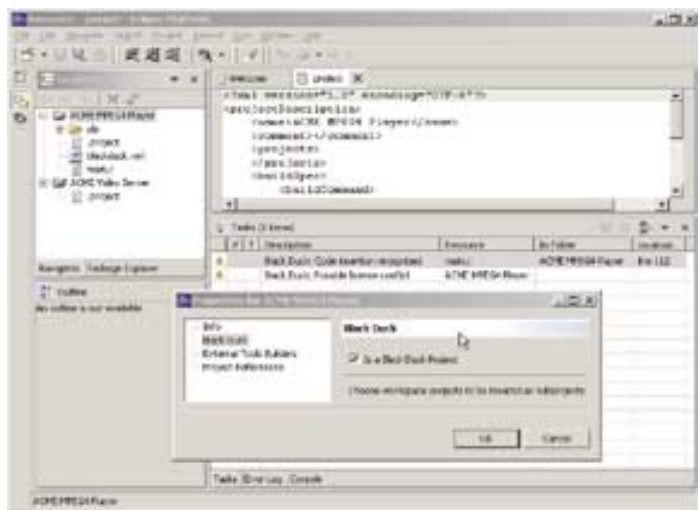
The DIFFzilla file feature in SlickEdit Studio makes it easy for developers to view file directory and source-tree differences and edit and merge results accordingly. "In the past you had to fix [the differences] manually," said Smith, noting that the ability to do three-way merges is particularly useful for developer teams, where several members might work on the same file simultaneously.

SlickEdit also sells Visual SlickEdit Plug-In for WebSphere Studio & Eclipse, a code editor designed for use with the IBM WebSphere Studio Application Developer and Eclipse IDEs. But Smith emphasized that SlickEdit Studio offers developers features, such as an

increased number of customizable views, that are not available using the plug-in with Eclipse.

The result is a cohesive user experience that feels like a single IDE created by one company, said Smith. For example, unlike the plug-in, the help system in SlickEdit Studio offers an index, as well as topical, not just keyword, searches.

SlickEdit Studio v2 is available on Windows platforms immediately, followed by a Linux x86/GTK version during the second quarter of 2004. SlickEdit Studio pricing, which includes one year of SlickEdit maintenance and support, starts at US\$849 per developer. A free trial is available at www.slickedit.com. ■



The Black Duck Enterprise Edition Eclipse plug-in allows developers to quickly see conflicts and other license violations.

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FirstSQL Releases First Embedded Edition

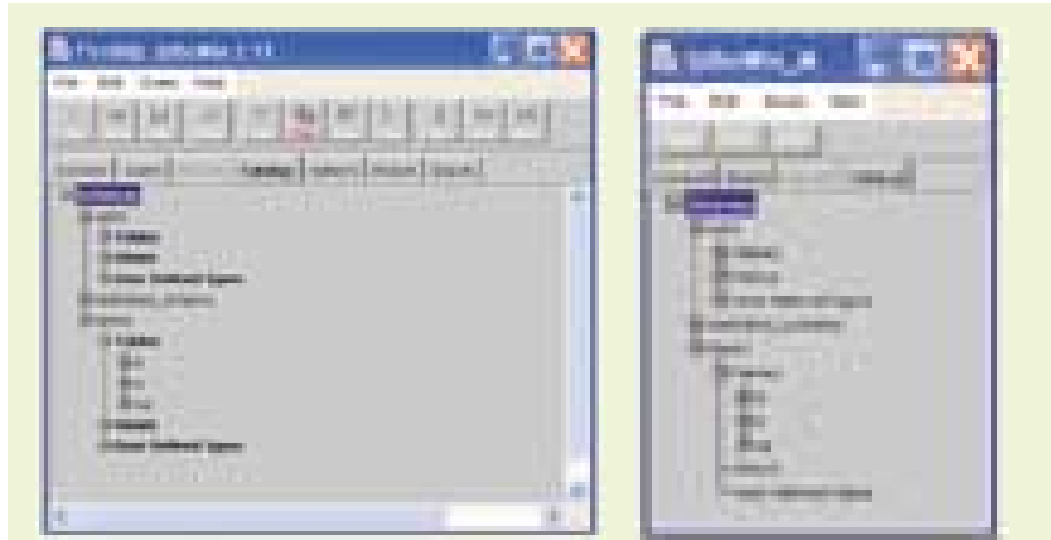
Permits on-device database development; bundles installer, JVM

BY EDWARD J. CORREIA

When debugging an embedded application, there's no substitute for working with actual target hardware. But do the same advantages apply when using an embedded database? With FirstSQLJ Embedded Mobile Edition 1.0, released in December, FirstSQL Inc. will let developers judge for themselves. According to the company, the J2ME object-relational database development environment can run wherever there's a JVM, even if it's on a handheld computer, such as a so-called personal digital assistant (PDA).

"Once a developer builds his application and puts it on a PDA, he might want to continue developing and fine-tuning it on the PDA to make sure it's running the way he wants," said David Morse, vice president of marketing at FirstSQL.

Based on FirstSQL/J 2.65, the company's flagship desktop Java database, the Embedded Mobile edition is aimed at enterprise developers looking for a full relational database for mobile and real-time embed-



A subset of FirstSQL's desktop database features (left) is available for handhelds.

ded applications, said Morse.

"This is for more than your typical messaging or Web-based applications," he said, adding that one example would be for sophisticated data collection applications for health-care professionals. "Nurses that visit patients in their homes want to have information and everything right there. They'll have complete interactive SQL capabilities."

Though Embedded Mobile's device footprint is significantly

larger at 400KB, Morse offered a comparison between it and competitor PointBase's Micro edition, which can occupy as little as 50KB. "At 50K, PointBase gives you an extremely simple, limited-functionality database," he said. "With FirstSQL Embedded Mobile, you've got full SQL capability; I can even do transactions."

And Morse countered competitive claims from Birdstep and other C databases by touting Java's portability

and refuting claims of slower performance. "This will run anywhere with a 1.1 or greater JVM. Developers can be running the desktop version and can then install it on whatever PDA their customers have or want to support. As for performance, the CPU is the main bottleneck, not Java."

Included with the tools is a subset of its desktop-version features adjusted for the smaller screens of handhelds, such as those for database creation

and manipulation and for performing ad hoc queries. "For the most part, developers will use the desktop version, but we've also got smaller versions for the PDA. Some people may never use it, but we're getting it out there."

Embedded Mobile also includes a target installer, which Morse claimed is another significant differentiator. "It's a real pain these days to figure out what JVM to use, what works on what device and where to get it. We've put them together and tested them, and gave you an installer that pushes it all down to the PDA."

And there's intelligence built into the tool. "You don't have to worry about what's on the target. It might have a JVM already installed. If it doesn't, you can include it."

FirstSQL Embedded Mobile Edition 1.0 costs US\$595 per developer seat, and includes AWT and command-line versions of all tools, including NSIcom's Crème JVM and installers for Windows CE and Metrowerks Linux. Runtime and JVM costs are negotiated individually. ■

Metrowerks Gets Serious About Symbian OS

Claims new tools are equipped to handle all phases of development

BY EDWARD J. CORREIA

Metrowerks, the soon-to-be-spun-off software subsidiary of Motorola Inc., has released Symbian OS editions of its CodeTest analysis tools, and an update to its CodeWarrior Developer Studio 2.5 IDE, which can now target the Siemens SX-1 and other Nokia Series 60 mobile phones.

According to Rich Bartlett, director of engineering for Metrowerks' Wireless Solutions group, the new tools for C and C++ are designed to handle all phases of the Symbian OS development cycle, from building and debugging the operating system and hardware drivers, to developing middle-ware and phone applications.



CodeTest and CodeWarrior cover apps from prototype to deployment, says Metrowerks' Bartlett.

First in line, and with the broadest developer appeal said Bartlett, would be CodeTest Native Probe, a US\$2,500 tool that he said lets Windows developers use Symbian OS emulation to take a first pass at their apps in advance of target hardware. "It gives developers the ability to profile code and improve performance, to gauge how effective their testing is by making sure they cover the entire application, and to allow them to check for memory leaks and other types of memory access violations," he said.

Once hardware arrives, developers can opt for the \$8,000 Software Probe, a soft-

ware in-circuit tool for use in reference designs and prototypes. "This tests applications with actual hardware and provides detailed trace capabilities to track down hard-to-find bugs in their software," Bartlett said. "It allows them to do that in the development board or in any hardware that has on-device debugging capabilities."

Bartlett pointed out that with a cost ranging between \$30,000 and \$32,500, depending on connection options, the Hardware Probe is designed mainly for device manufacturers. "The advantage is that it's much less intrusive on the execution of your program because you have to instrument your code much less." The disadvantage, he said, is that the hardware probe cannot be used on most working

phones because they generally don't have the probe points.

Metrowerks also released the CodeWarrior Wireless Development Kit for Symbian OS, which Bartlett said includes everything a developer needs to design, test and debug code destined for a

mobile phone, including the phone. "This is an advantage because then you can actually deploy and test the app on a phone before you're ready to go to market." For \$1,150, developers also receive CodeWarrior Development Studio for Symbian OS 2.5 Personal Edition and version 1.2 of Nokia's Series 60 SDK.

"This kit is for application developers that don't necessarily have access to development boards," said Bartlett. ■

MOTOROLA

← continued from page 1

ing a favorable IRS tax ruling, Motorola will distribute those shares to Motorola common shareholders in a tax-free spin-off as a special dividend.

Since its acquisition by Motorola in 1999, Metrowerks has reported revenue through SPS. Due to quiet period restrictions, executives from Metrowerks were unable to comment for this story.

Also in December, Motor-

ola's board of directors unanimously elected Ed Zander as its new chairman and CEO, replacing Christopher B. Galvin, who resigned in September amid strategy disputes. Zander was most recently managing director of equity firm Silver Lake Partners, but is perhaps better known as the former president and COO of Sun Microsystems Inc., from which he resigned last June. Mike Zafirovski will remain as Motorola's president and chief operating officer. ■

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Software Piracy: A Growing Problem

Licensing and security vendors admit there is no silver bullet to protect your intellectual property

BY LISA MORGAN

In 2004, a number of software companies are going to learn an expensive lesson the hard way: Hope is an ineffective measure against software piracy.

Some software publishers have thus far failed to adopt software protection and licensing management solutions because they represent yet another expense, which results in a higher cost of goods sold and thus higher end-user pricing. Adding technology also can increase the complexity of software products, making them more difficult to use, which can and does infuriate end users. And, software protection and license management products may interfere with the operation and performance of the software products they are designed to protect.

On the other hand, software piracy is a growing problem that affects more than just the large companies with high-profile cases in federal court. According to the Business Software Alliance, a global nonprofit organization that helps to shape public policy and prosecute cases, 23 percent of software in the United States was pirated in the U.S. alone in 2002. That translates to US\$2 billion in lost revenue, 105,000 fewer jobs, \$5.3 billion in lost wages, and more than \$1.4 billion in lost tax revenue, according to BSA.

Although brand-name companies are targets for highly organized bootlegging operations, even small companies and individual developers fall victim to software piracy. The difference is, the small companies are forced to go out of business faster.

SCOPE OF THE PROBLEM

Part of the difficulty is that software piracy itself is a misunderstood term—even vendors in the software licensing and



security space do not necessarily agree on what types of software piracy are the biggest problems, or to what extent.

Mental images of Johnny Depp on the deck of a tall ship or bootleg software ninjas don't help. Software piracy is not limited to modern-day Robin Hoods or sweatshops in Kuala Lumpur. Sure, individual users share software, and organized crime rings are capitalizing on the manufacture and distribution of illegal software that is so well conceived that the products appear to be authentic. Pirated software users have been known to actually register fake licenses with brand-name manufacturers and get access to specially priced upgrades.

Most software piracy isn't that sensa-

tional, however, and it isn't quite as malicious. Companies sometimes purchase stand-alone products and place them on servers or otherwise distribute more seats than they purchased. In some cases, companies fail to keep track of their software licenses, which can result in misuse, albeit unwitting in some cases. And, of course, software administrators and individual end users commonly fail to read software license agreements before clicking the "I agree" icon, which legally binds them to the contract's terms.

Lack of knowledge or intent is not exactly synonymous with innocence, however. Whether a person or company intentionally or unintentionally uses, copies or distributes unauthorized copies

of software, the result is the same. That person and the company she works for have violated federal law, which can result in criminal and/or civil liability. (See "Tell It to the Judge," page 20.)

MITIGATING THE PROBLEM

Software licensing and security vendors are quick to point out that there is no silver bullet that will protect a software company from software piracy absolutely. What they can do is make the process difficult enough that the offending party will have to invest considerable time and perhaps money attempting to decrypt files or otherwise "work around" software license management.

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Tell It to the Judge

The last thing you or your CEO needs is to be caught on the wrong side of the law

BY LISA MORGAN

Go ahead. Make an attorney's day. If you are violating a software licensing agreement, then you may someday find yourself in federal court. Individuals may be held criminally and/or civilly liable. Employers may be held vicariously liable. But, of course, that will never happen to you.

After all, who is going to find out? Software piracy is a lot like tax fraud. The chances of getting caught are pretty slim. On the other hand, software vendors are getting more sophisticated. And, there are entire organizations such as the Business Software Alliance (www.bsa.org) and the Department of Justice's Computer Crime and Intellectual Property Section (CCIPS) (www.usdoj.gov/criminal/cybercrime/iplaws.htm) dedicated to identifying and prosecuting software pirates.

Companies selling software internationally are the most likely to fall victim to software piracy. Although some countries, such as the United States and the United Kingdom, have strict intellectual property laws, there are many more countries that do not. In some countries, copyright infringement is culturally acceptable. The

Business Software Alliance estimates that companies lose US\$11 billion annually to software piracy. And the problem is getting worse over time.

Software piracy occurs in a number of different ways, some of which barely phase average consumers. For example, individuals often think nothing of sharing software with friends and family. IT consultants sometimes install applications or operating-system upgrades on their clients' computers as a value-add. And, of course, users often fail to read licensing agreements.

Then there are the real "bad guys," distributors and manufacturers who sell counterfeit software. In cyberspace, there are newsgroups, Internet Relay Chat groups, Web and FTP sites and e-mail methods of piracy, to name a few. The Internet poses perhaps the largest threat to law enforcement agencies because software can be copied and distributed faster, cheaper and on a broader scale than its physical counterpart.

In response, prosecutors and plaintiffs are getting more aggressive and also more sophisticated. The Department of Justice has dedicated certain federal prosecutors to high technology and intellectual prop-

erty crimes. BSA is teaming up with software companies to identify and prosecute offending parties around the globe. Although a number of efforts have focused outside the U.S., a growing number of arrests and convictions are taking place domestically, and that number will continue to rise. And so will the number of offenses.

Although the unauthorized sharing of software often is taken lightly, offenders and potential offenders should be well aware of the risks they are taking.

Violations of federal law can result in monetary sanctions, jail time or both. Offending parties can face prison sentences of several months to several years as well as fines ranging from thousands of dollars to millions of dollars, depending on the nature and degree of the offense. In addition to that, the software company that has been harmed by the activity can file a civil complaint.

In the past year, CCIPS has prosecuted and publicly reported a number of domestic software-related cases in which the estimated loss ranges from a few thousand dollars to \$50 million. Some of the offending parties were convicted, sentenced and fined. Other cases have not been determined or the court found in favor of the defendant.

Brand-name software companies have been bringing civil suits against offenders. Microsoft prevailed against Illinois-based Logical Computers, which had distributed counterfeit copies of software in vio-

lation of the Copyright Act, the Latham Act and the Illinois Uniform Deceptive Trade Practices Act. Microsoft also won cases against Michigan-based Compu-source and Massachusetts-based Crazy Bob's discount computer products store for similar offenses.

But, of course, software publishers do not always win their cases.

Adobe, Lotus, Microsoft and Symantec collectively lost a case against South Sun Products, a wholesale jewelry distributor, for technical reasons. South Sun had apparently purchased single copies of certain software products and installed them on several computers. Microsoft et al. asked for an emergency temporary restraining order, which included a request for an immediate search of South Sun's premises to prevent the destruction and concealment of evidence. The court ultimately held that Microsoft et al. had to do more than just allege that South Sun *might* conceal evidence; they had to show that South Sun *would likely* conceal evidence.

Software pirates of all types would be wise not to rely on such remote possibilities. Plus, ignorance of the law is not an affirmative defense to copyright infringement—the category under which software piracy falls.

Just because you violate or circumvent a licensing agreement, it doesn't necessarily mean you're going to get caught. But if you do get caught, there likely will be a price to pay. ■

SOFTWARE PIRACY

◀ continued from page 19

"You can curtail, discourage or reduce software piracy, but you can't completely prevent it," said Yanki Margalit, founder and CEO of Aladdin Knowledge Systems in Israel. "Software developers need to sell more than just software; they also need to sell locks and keys."

The locks and keys come in the form of hardware and software. Hardware "dongles" plug into a USB or serial port and provide copy protection. Software checks to see if the dongle is present before unlocking the application.

Software-based approaches range from simple product activation (such as typing the serial number printed on the outside of a jewel case into a field) to server-centric methods that authenticate users and the software they use on an ongoing basis.

Vendors do not necessarily agree about which approach is better. Some say dongles are more secure than their software counterparts. Other say that dongles are expensive to buy, expensive to inventory and maintain, easy to lose and easy to spoof using a mirror.

Software methods also can have their weaknesses, however. For example, simple software activation, which requires a user to type a serial number into a field, may allow a user to install the software on multiple stand-alone

computers without being detected. Hardware profiling is one way to get around that, but if the user adds or deletes hardware, then the software may fail to activate.

Some software publishers bind software license agreements to software products to thwart unauthorized distribution. Users with a little programming expertise can sometimes change a single bit "authorizing" otherwise unauthorized installation. Then, of course, there are "crack" programs available online that enable users to get around a vendor's software security mechanisms or to download bootlegged copies of software.

To make software piracy a little more difficult, third-party vendors are responding with shell wrappers and APIs that provide varying degrees of protection. Wrapping is quick, easy and relatively cheap. The use of APIs requires more time and effort, which some users say is well spent. APIs allow software developers to encrypt different files, such as the software license, the user manual and different components of a software program, separately as opposed to hiding a key in a hidden file (which can be discovered). Clearly, APIs provide a more granular level of control than wrapping.

MORE THAN SOFTWARE PROTECTION Aladdin and Rainbow Technologies Inc. point out that their API technologies not

PROTECTING YOUR SOFTWARE

Here is a sampling of security packages on the market:

Aladdin Knowledge Systems

HASP (Hardware Against Software Piracy)

HASP is a hardware-based software protection system that supports Linux, Macintosh and Windows.

www.ealaddin.com

Desaware Inc.

Desaware Licensing System

The Desaware Licensing System provides secure server and machine licensing for .NET/Windows applica-

tions and Web services. www.desaware.com

Macrovision Corp.

FLEXnet

FLEXIm

FLEXnet is a universal licensing platform that enables license management and administration. FLEXIm separates usage rights from license policies so software publishers can change licensing terms on-the-fly. www.macrovision.com

Rainbow Technologies Inc.

Sentinel SuperPro

Sentinel Im

Sentinel SuperPro hardware keys and Sentinel Im license management software together enable software protection and licensing management.

www.rainbow.com



only allow companies to mitigate unauthorized software use and distribution, they also enable software publishers to explore new sales models, such as limited-use demos, subscriptions, transaction-based sales and product updates and upgrades.

The technology allows software publishers to control which users have access to which products or product features so, for example, a software company can send a demo product to a customer that can be transformed into a

fully functional product. Alternatively, software publishers can turn features on and off, depending on what the customer is willing to pay for.

In other words, don't focus on the detriments of use restraint; focus on the positives of customer choice. But is that just vendor marketing hype, or are their customers and the end customers actually buying into the idea?

"It's a trade-off. [End] customers hate licensing and activation schemes," said

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SOFTWARE PIRACY

◀ continued from page 20

Dan Appleman, architect at software protection company Desaware Inc. "The question is, how tight do you want to be?"

Appleman pointed out that tracking the use of software licenses is, in effect, spying on customers, which raises privacy issues. Nevertheless, software publishers want to prevent the bypassing of licensing one way or another but not all want to employ Draconian measures, which is why companies like Desaware offer flexible options that allow for varying degrees of software protection.

MORE THAN SOURCE CODE

Aladdin's security solution, HASP, is being used in the entertainment industry by Soundminer Inc., which provides a search engine for sound effects. Soundminer's customers include Skywalker Sound, Sony and Warner Brothers.

Soundminer is using the enveloping feature of HASP, which encrypts all binaries, including code and data. Without a hardware dongle, the data cannot be decrypted. If the dongle breaks or an unauthorized person uses it, Soundminer runs a check against the key's unique serial number and invalidates the key.

Justin Drury, partner and head of software development at Soundminer, said that a customer will spend thousands of dollars recording a unique sound (such as a "Star Wars" sound clip) that can otherwise be easily downloaded and distributed by a freelancer (the sound industry apparently uses a lot of freelancers).

Typically, a freelancer works at a number of studios, so hardware profiling or other mechanisms tying software to a specific computer or location does not work in that market. In response to the sound industry's unique requirements, Soundminer created a "freelance mode" that encrypts sound files, which can be decrypted from any location using a public/private key scheme.

To further mitigate unauthorized downloads, Soundminer keeps a log of all transfers. Whenever a file larger than 1GB is downloaded, the system automatically sends an alert to the administrator.

TO PROTECT OR NOT

Cost is one reason why a number of software companies have yet to adopt third-party software licensing and security products. Apparently, companies selling software products at more than \$1,000 per seat are the most common adopters because it makes sense to

spend some percentage of revenue or tens of dollars per license to protect millions of dollars of revenue. Not all software protection and licensing management products lend themselves to the low-end market, however. Some vendors offer pricing schemes that are based on some reasonable per-

centage of revenue, which allows the publishers of \$9.95 software or games to protect their products as well.

Vendors and users point out that the cost of software protection shouldn't be the deciding factor. Software publishers need to consider opportunity costs—the revenue they would

have realized if their software had not been illegally copied and distributed.

Then again, if a customer would not have purchased the product in the first place, then the software publisher arguably hasn't lost revenue. But in the eyes of the feds, that's beside the point. ■

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EDITORIALS

Middleware Is Relevant

One highway, two vistas. In late December, someone driving south on US-101 in Silicon Valley would have seen two billboards. A conventional billboard from IBM, put up first, states, "Middleware is Everywhere." A few miles farther down the road, a glaring electronic sign from Sun retorts, "Middleware is History."

Given that the two signs use a similar word-search puzzle format, this is clearly not a coincidence; Sun is having some fun at IBM's expense. But why, at the end of 2003, are leading vendors still arguing about middleware?

From Sun's perspective, and in a Sun-centric world, perhaps middleware would become less visible. But it certainly wouldn't go away. A mesh of Sun servers requires middleware, in the form of the J2EE Connector Architecture and Java Message Service plumbing, to link distributing computing together. Sun's N1 architecture is based on middleware. Sun's Jini and Jxta projects are middleware, though they aren't marketed as such.

IBM is right. Middleware—the glue layer that binds disparate systems together, and which enables *n*-tier and distributed computing—is everywhere. Of course, IBM's own offerings, primarily WebSphereMQ (still better known by its previous name, MQ Series), are highly visible, along with competitive messaging-oriented middleware products. Web services brokers are middleware; arguably, so are Web services themselves. Enterprise service buses are middleware.

In fact, one could argue that in 2004, rather than being history, there are more middleware options than ever before available to development managers and data-center managers, and those options are more important than ever in solving real-world application development and integration challenges.

The Mono Culture

The term "monoculture" comes to us from agriculture, where a geographic region cultivates a single crop. When that crop does well, the region is prosperous. But when that crop does poorly—the market collapses, a pest or blight wipes out the plants—the region is devastated.

One could potentially define Microsoft's Windows and .NET as a monoculture. A .NET-only data center, based on a single set of binaries for operating systems, applications, databases, managed runtime environments and even development tools, offers glorious simplicity when times are good.

But if something goes wrong with the datacenter monoculture's single set of binaries, due to a security breach, undiscovered bug or change in technology direction from Microsoft, the entire server farm could be in peril.

That's where diversity is good. Novell's open-source Mono project, which seeks to create an implementation of much of .NET on Linux, is unlikely to threaten Microsoft's Windows monopoly. By its nature, Mono will be reactive, always half a step or more behind Microsoft's cutting edge. Yet it plays a vital role in giving IT shops options.

The history of open-source projects like Mono is encouraging. Certainly Samba has been critical in giving Linux users access to Windows servers. Wine allows many Windows applications to run on Linux. We're glad to see Mono, and the newer DotGNU, moving forward. ■

GUEST VIEW

CODE ANALYZERS: WHAT'S THE BUSINESS VALUE?

Parasoft CEO Adam Kolawa recently wrote a Guest View that was a scintillating critique of the software development community ("The Strange Inconsistency of Developers," Dec. 1, 2003, page 25, or at www.sdtimes.com/opinions/guestview_091.htm) particularly aimed at developers like me.

In his protest, Kolawa chastised developers for prominently displaying well-known software development books in our offices while hypocritically not using tools such as static code analyzers to validate code quality. He also claimed we often avoid code analyzers out of ignorance and that we'd be better off spending more time using tools and less time reading books.

I felt personally attacked, as I too display such books in my office and discuss such books with my peers. So, with an open mind, I decided to give his tool a try for myself. I have used static code analyzers in the past with little benefit; maybe this tool was different.

I obtained a demo license

for Parasoft's Code Wizard, a static code analyzer, and ran it on a personal C++ project. The project consists of a few dynamic link libraries and a main executable. The code interfaces with the ODBC API and Oracle's OCCI data access library (new in Oracle 9i). The project is composed of about 3,000 lines of code and makes use of a few Gang of Four design patterns. It is a nontrivial project, but not overwhelmingly complex.

The code analyzer proved to be easy to use and integrated seamlessly into Microsoft's Visual C++. That's good. But the real issue, of course, is the usefulness of the problems it identified. Let's take a look at them.

In a nutshell, the tool identified the following: (1) a few parameters where `const` might be used, (2) classes with dynamically allocated memory that did not explicitly define a copy constructor or assignment operator, (3) negative logic in conditional

statements, (4) C-style casts, and (5) warnings pertaining to implicit conversion functions (for example, passing a literal into methods accepting STL strings). It also tagged a few assignment operators found in logical expressions as "Severe Violations," when in fact they were correct as written.

I did change my code in a few spots, based on the tool's suggestions, but note that nothing the tool caught actually would have caused a runtime error because of the way in which the code is used at runtime.

The tool produced false positives as well. The classes that dynamically allocate memory, for example, never have their copy constructors or assignment operators invoked. The negative logic in conditionals were all checking ODBC return codes and the program read more easily as written. Some of the parameters marked for `const` usage could not have been changed as recommended by the tool.



MICHAEL LUTZ

SELLING J2EE 1.4

In late November, the Java Community Process gave Java 2 Enterprise Edition (J2EE) 1.4 its blessing. So now the question is, as we wait for J2EE 1.4-compliant Java application servers and Java Database Connectivity drivers to appear, what are we going to do with it?

Job one for Java developers is to get the word out that J2EE 1.4 is available and can make a competitive difference for your customers over both earlier Java implementations and .NET. For my money, Sun fell asleep on the job in spreading this message.

In the past, new versions of J2EE were announced with spotlights and fanfare. This time around, Sun treated it as an afterthought, and instead reserved all its hoopla for its Java Desktop System. Heck, Sun even gave its alliance with AMD to make Solaris work on the 64-bit Opteron chip more of a pitch than J2EE 1.4.

You and your programmers may not want to do this kind of marketing work, but, trust me, it's as necessary to your bottom

line as making sure your code runs properly on your customer's hardware. Since Sun isn't going to carry the ball for you this time, it's up to you.

First, you need to figure out exactly what it is about J2EE 1.4 that will make a real difference to your customers, not your developers. For example, you and your crew may think that it's the bee's knees that J2EE 1.4 includes the Java API for XML and XSLT Processing application programming interface (JAXR API), which enables access to XML registries such as UDDI and ebXML. Not to mention, your programmers may be overjoyed that J2EE 1.4 now supports a Java API for XML Remote Procedure Calls (JAX-RPC) 1.1 and SOAP Attachments API for Java (SAAJ) 1.1. The CIO on the other side of the table, though, probably developed a glassy stare somewhere around XSLT. This is not the way to win contracts.

Instead, what you should

be selling is that J2EE 1.4 is just what your customers need to set up Web services. Why, yes, I did just say that in the paragraph above, but there's a big difference. Anyone who knows anything about IT can



STEVEN J. VAUGHAN-NICHOLS

get their hands around the idea of Web services, but only Java programmers could get the gist of my earlier paragraph.

Sometimes technology jargon is absolutely necessary to get a specific technical point across, although I would argue that J2EE 1.4 has gotten too thick with both jargon and technical complexity for its own good. Tellingly, J2EE 1.4 specification lead Bill Shannon agrees with me. In any case, when you're talking to clients, unless they're also developers, you want to keep your conversations at the most nontechnical level possible.

At this point you might be thinking, isn't this the sales team's job? Well, yes, it is, but you and your team can help as well. Remember that most new

Fixing the problems caught by the static analyzer would have been an academic exercise. Is there really business value in conducting such exercises? And even if they had resulted in real runtime problems, they would have been caught during unit, system or stress testing anyway.

There are two questions we need to answer honestly: What is the business value of static code analyzers? And, are developers the right target for such sarcastic darts from Adam Kolawa?

First, the business value of code analyzers is not clear. Has anyone associated an actual dollar figure with the cost benefit of using static code analyzers on a project? This argument alone could motivate development organizations to use code analyzers if they were proven to improve the bottom line.

In my situation, I had tested the software on multiple platforms (Windows 2000 and SUSE Linux) and it worked properly. Furthermore, I used a runtime memory validation tool so I knew the code was not incurring memory leaks or corruption. I knew that essentially

the project met its requirements and it worked properly.

Second, let's look at whom Kolawa targeted with his opinions and in what manner. The opinions targeted developers, stating that often out of ignorance we decide to ignore the results of static code analyzers, or that our code already meets the high standards found in our favorite literature, or that we simply don't have enough time to fix the issues.

These characterizations are overly simplistic and largely incorrect. Developers know their code isn't perfect. Software is complex and we know it. What we question, however, is the *value* of spending time with static analysis tools versus the value of working on other tasks. Developers need to see the benefit of running such tools against our software. This comes back to culture, leadership and priorities, none of which are controlled by developers—the target of his sarcasm.

It is here that Kolawa makes his biggest mistake, and he probably knows it already.

Developers typically don't pick and choose where we spend our time—management

does. So even if there is technical value in running static analyzers and making subsequent changes to our code—management makes these decisions based on business criteria. Kolawa needs to demonstrate to business leaders, not developers, that taking the time to run analyzers and fix the identified issues are more worthy than working on that next customer request.

The problem with static code analyzers is just that: They are blunted by their intrinsic static nature. This means by definition that they know virtually nothing about the *context* of code at runtime. Their effectiveness is limited by this fact. The category of problem they can identify is clearly limited. Because of this limitation very often problems can only be tagged as *possible* problems. Only at runtime can these *possible* problems be validated with certainty. Manual effort is required to close this gap, checking each violation one at a time.

Important categories of problems cannot be identified by code analyzers: basic logic problems for one. Code analyzers tend to focus on coding stan-

dards and coding practices. What is most important about software is its *design characteristics*, not whether or not a particular set of coding best practices is followed. Questions such as flexibility, extensibility, etc., cannot be addressed by static code analyzers very well, if at all. Thus we see a clear limit to the usefulness of such tools.

I have a message for Adam Kolawa: Give us developers a break. We read books and discuss them not out of blind pride but out of thirst for better software. Most of these books talk about concepts that are impossible to check through static code analysis (for instance the "Design Patterns" book written by the Gang of Four, Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides). Developers would use static code analyzers consistently if we were given proper incentive and the technical benefits were clear. Such incentive will not be given to us, however, until the business benefit is empirically demonstrated. ■

Michael Lutz is a software engineer with Siemens Health Services.

LETTERS TO THE EDITOR

MORE THAN JOBS LOST

I enjoyed David Rubinstein's column ["Stayed in the U.S.A.," Dec. 15, 2003, page 22, or at www.sdtimes.com/cols/industry_watch_092.htm]. As a suggestion, if possible, I would like to see the following points discussed in the future:

As I see teams broken up with foreign replacement and innovation shipped overseas (along with the potential failures, as Mr. Rubinstein mentioned), like him, I wonder, "So what actually is being gained by moving work offshore?"

Is it possible that corporate America simply doesn't understand what they are losing by replacing American software engineers? I have 10 years of software development experience, and for the life of me, I can't understand why our value is so misunderstood.

The amount of knowledge that exists in my head regarding the current product that I am developing simply cannot be passed on to someone else. What are the real losses that this loss of knowledge will have on a company's bottom line when an American software engineer is

replaced? I get sick of reading all the articles in other magazines from the numerous proponents of offshore software development: the cost savings, the "around-the-clock" development, etc. In my opinion, they are stepping over dollars to pick up pennies, as they replace the knowledge of their own product.

I urge corporate America to start researching these questions. I understand it will take effort, and we may never understand the impact of software engineering positions being lost in America until years from now, but the research must begin now.

Jeff Camomile

Senior software engineer
Salt Lake City

CORRECTION

Enea Embedded Systems, the embedded software division of Enea Data AB, was misidentified in the Dec. 15, 2003, Special Report.

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contracts spring from the business you already have, not from going out on the street and looking for it or filling out requests for proposals.

Think about it: Your people, not sales, not marketing, are the ones talking to customers every day. I'm not suggesting that they need to go in and start saying, "You know, we could put up your Web services faster and better with J2EE 1.4." What I am saying is that you should teach your crew to recognize potential new assignments when they hear them and know what to do with them.

That can be hard, since their focus, as it should be, is on getting the job at hand done right. You'll need them to realize that while hitting deadlines and getting code right the first time is important for the project, for the good of the company, and their jobs, they should also listen to customers.

Then, when you or your programmers hear your client talking about a problem or a need that could be solved by J2EE 1.4, you should mention that your company can take care of that for them. The

point isn't to make a design meeting into a sales call; it's simply to let them know that you are able and willing to help them with projects besides the one you're working on today.

Next, you should let your sales team know about this possibility. Then they can do their job, so you can focus on getting the latest programming project done on time and under budget.

Both sides are important. The best thing a programmer or a development team can do for its company is to do the job right the first time with a positive attitude. A job well done is a better advertisement than any number of glossy ads placed by Sun about J2EE 1.4. At the same time, though, listening to customers, knowing how your tools and skills can help them, and acting on those thoughts will go a long way toward keeping you and your company employed. ■

Steven J. Vaughan-Nichols is editor of Practical Technology (www.practical-tech.com) and has worked as a programmer for NASA and the Dept. of Defense.

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WRITE TO THE OS OR THE JVM?

In a recent visit to Sun Microsystems Inc., I was regaled for an hour by Jonathan Schwartz, the company's charismatic executive vice president of software. Among the many messages Schwartz emphasized was the press's need to urge developers to write applications for the Java Virtual Machine, rather than to the operating system—even if that operating system is Sun's own Solaris.

Writing to an intermediate layer like a VM is a mantra that has been repeated so many times that we all nod reflexively in agreement. Despite that agreement, with the notable exception of programs that require Java app servers, we go right back to coding to the operating system.

This is peculiar, perhaps, because operating-system APIs have hardly been faithful servants to developers. Consider Win32, the hideously sewn-together detritus from Microsoft's application developers. Or the Unix APIs, which were finally standardized long after Unix was on the wane for lack of code portability between the different variants. The first-line victims of these APIs are indeed developers, who must constantly tweak code when new releases of the operating system appear, and must do a fair bit more than tweak if they ever hope to port a codebase to another platform.

So you'd think that the idea of writing apps for the JVM would be such a clear no-brainer that neither Schwartz nor anyone else would still have to be extolling its virtues. But this is not the case, and the reason is fundamental to the problem: Virtual machines must duplicate so much of the operating system's functionality that they mimic the problem in a different form.

Let's go back to the beginning.

Virtual machines long pre-date Java, of course. Since the 1980s, most major vendors of COBOL compilers have sold a product that generates p-code that must be executed by a virtual machine. The benefit is portability and the drawback is performance.

Because sites running COBOL tend not to have critical performance needs, the virtual machine is an elegant and accepted solution. However, its use never spread beyond this niche, even though those sites have acute needs for integration and portability.

On the other side of the world, pre-ANSI C compilers produced fast code that was aggravatingly nonportable. Getting even simple programs to port from Unix to Lattice or Microsoft compilers was a true chore. There were wide disagreements on what was K&R, what

were reasonable extensions and so on. Basically, your code was married to the compiler you first compiled it with. Despite this lock-in, C, as we know, became fabulously popular, and ultimately the language of choice for all serious programming.

These two trends suggest that although writing for the VM might make sense, its sensible aspect does not outweigh developers' innate preference to be closer to the operating system and to the hardware—even at the cost of portability.

Java manifestly advanced VMs by providing a single, fairly complete VM. COBOL VMs were all different. So, while you could run MicroFocus p-code on numerous platforms, you could not run it on the VM from another vendor. Java

broke this model by universalizing the VM. But it soon ran into operating-system-like problems.

First, JVMs also started revving APIs. Code that ran on Java 1.0 didn't work well on 1.1 or on later releases. APIs were marked for deprecation and codebases had to be updated. The AWT-to-Swing transition was another problem. While this evolution has abated somewhat, it's still emphatically true that porting Java code is no gimme, although it remains far better than most other solutions.

.NET, Microsoft's virtual machine, is

INTEGRATION WATCH



ANDREW BINSTOCK

by no means a preferable alternative, in view of the fact that it's not strictly portable yet. (The Mono port to Linux should be complete by next year, however.) And already the .NET APIs look a lot like operating-system APIs, and they are as profuse as Java's. (Microsoft's documentation of the .NET functions now surpasses 7,000 pages.) At this rate, the problem of revised and deprecated .NET APIs is inevitable.

If you want great speed, great portability and steadiness of APIs, products like Trolltech's Qt C++ library probably make the most sense. But such products do not have a history of great commercial success (consider Visix, XVT and Zinc Software, for example), because developers are gun-shy about grokking a new API set that masks operating-system functions and is supported by only one vendor.

In addition, the lack of a large user base is understandably a concern, despite the products' general excellence. As a result of finding no great advantage in VMs or in other solutions, programmers instinctively gravitate back to operating-system APIs, where they feel safe, even if eternally tormented. Sun's Schwartz and soon Microsoft will be singing the same tune to audiences who nod affirmatively, then ignore the message. ■

Andrew Binstock is the principal analyst at Pacific Data Works LLC.

.NETTING OFFICE, VSTO-STYLE

Visual Studio Tools for Office is an add-on for Microsoft Visual Studio that allows you to program Word and Excel in C# or Visual Basic .NET. While it doesn't make these powerful applications seamless software components able to consume and provide services for arbitrary .NET classes, it does bring considerable power to document processing solutions.

The expressiveness of object orientation and the vast .NET Base Class Library reduce the difficulty of many tasks that otherwise would require daunting amounts of Visual Basic for Applications. Even if you're not particularly interested in Office solutions, VSTO points the way toward the more sophisticated security models that will be the rule in the "Longhorn" time frame.

VSTO, which is also available to MSDN subscribers as a 3MB download, installs new options to Visual Studio's New Project Wizard that allow you to create an Excel spreadsheet, Word document or Word template with macros programmed in either VB.NET or C#. There is no timetable for support of other Office components such as Outlook and PowerPoint, although it should be noted that the Primary Interop Assemblies that ship with Office 2003 allow access to these applications from .NET applications, just not the integration of .NET methods

inside the documents themselves.

The VSTO New Project Wizard creates a document of the specified type with custom property fields that point to the location of the .NET assembly that contains the macros. The VSTO Wizard also generates a fairly complex .NET class that imports the Office namespaces, initializes fields to contain references to the Office application and current document, and links up document events with .NET delegates.

Programming Word and Excel is done via insanely complex object models that expose the insanely complex capabilities of those applications. Like many COM object models, the actual logic of an object is often obscured by a dense thicket of logically unnecessary references to the application as a whole, the user's preferences and the current time in Helsinki. To become productive in Office programming, you must learn to avoid wandering into the object model and instead limit yourself to carefully planned forays to specific functions.

I say "to specific functions" rather than "to specific objects" because another interesting aspect of programming Office is that the application programming models have a distinctly functional feel to them. One does not concentrate so

much on navigating a large web of objects and manipulating them in a uniform manner, as one locates a single object (the current selection, the active cell, etc.) and moves it about like a cursor, querying and manipulating the object's state. As luck would have it, in the days preceding the writing of this article, I had been drafting a piece on the anonymous function facility of C# 2.0, which is a powerful facilitator for this style of programming.

A word of caution regarding C# 2.0—if you have both the 1.1 and 2.0 preliminary framework installed, the security tools of VSTO affect only the 1.1 security policy manager, while the Office apps load and attempt to execute from the 2.0 framework.

VSTO is the first Microsoft programming technology that treats code, even if it's stored on the local machine, as guilty until proven innocent. Such healthy caution will be the rule, rather than the exception, in the coming years, and Microsoft developers of all stripes must commit themselves to learning the basics of Code Access Security.

I like the "library card" analogy for CAS in Howard and LeBlanc's "Writing Secure Code, 2nd Edition," from Microsoft Press: A library has a security policy of lending only to those who have a card. Ophelia is a tack-sharp card owner who does favors like borrowing books for her lacking-in-judgment friend Uma. Uma, in turn,

sometimes gets asked by trustworthy Tom or malicious Mary for a book loan. In the past, Ophelia (Office) had simply asked Uma (the user) if she was sure she could trust the person to whom Uma was lending the book ("This document contains macros. Only enable them if you trust the person who sent you the document").

Unfortunately, Uma often made mistakes (and unleashed another scripting virus). The new model still involves a chain of requests (code to user's document that is loaded into Office) but the request is tracked by the library (security policy) all the way back to its origin (trustworthy Tom or malicious Mary) and demands to see their card (evidence). The location-based evidence of VSTO code is actually *easier* to establish when the .NET assemblies reside on some permanently established network share or URI. Deploying VSTO solutions from a share has the added benefit of being vastly easier to update.

VSTO's US\$499 list price seems unrealistically steep for what is essentially a New Project Wizard, but MSDN subscribers should investigate VSTO if for no other reason than to familiarize themselves with the security model and deployment techniques. ■

Larry O'Brien is an independent technology consultant and analyst, and the founding editor of Software Development Magazine.

WINDOWS & .NET WATCH



LARRY O'BRIEN

TWO SIDES TO EVERY TRANSFORMATION

Phil Murphy of Giga Information Group was reading the Oct. 15 issue of SD Times when he came across my story about Object Management Group's effort to create a specification for transforming legacy applications and systems to bring them up to date.

"I thought, 'I've gotta rebut this somehow,'" Murphy recalled of the article ("Breathing New Life Into Legacy Systems, page 6, or at www.sdtimes.com/news/088/story9.htm). "It's like communism. In theory it sounds good, but there's always a ruling class somewhere."

In a report he released on Nov. 3, Murphy took issue with the article, outlining the reasons he believes this legacy transformation effort is, in his words, fatally flawed. Among them are that OMG has bitten off too big a piece to swallow, that legacy transformation isn't cost effective and the gains are relatively minor, and that the entire effort is in his view not pragmatic at all. He said he would recommend to his clients that they not go down OMG's path.

The OMG effort, according to task force co-chairman Bill Ulrich, involves more than moving data off mainframe systems into more modern architectures. Indeed, it encompasses "any production-enabled system regardless of language or platform."

Of this all-inclusive approach, Murphy said, "They're going after the world. They don't do any of this in *one* language, but now they want to take on them all."

Murphy believes some programming languages should be left to die, languishing in a Darwinian struggle as unfit to survive. "Vendors make tools that go after languages on the upswing, [because] that'll make them money," he said. COBOL is still alive, he said, because it is

closely aligned to business functions. But by embracing old languages like Fortran, PL/1, LISP and others, Murphy claims, OMG's project is unworkably broad in scope and doomed to fail.

A bigger problem, according to Murphy, is that the legacy transformation process can't be automated. Therefore, he believes, a company could get a quarter of the way through one of these huge transformation projects, only to suddenly realize that all the data is out-of-date. "Unless there is a dynamic collection vehicle, they're just building a mountain of data no one will trust," he said.

But the biggest nail in the coffin, according to Murphy, is that the "magical mythical description layer" OMG proposes be built over every piece of an organization's technology stops at the paragraph component level. "Then, you have to manually document what [the code] is supposed to do. But what if I don't understand it enough to document, or if it changes, the static documents' comments are out of date."

When asked about Murphy's comments, Ulrich said the group hasn't made a final decision yet as to whether the next RFP will capture code-implemented processes. "We didn't want to tackle that in the first RFP," he explained.

The goal of the legacy transformation project, Ulrich said, is to give a higher view of a system, to help organizations sort through and eliminate fragmenting, redundancies and inconsistencies that create inefficiencies in their systems.

Ulrich said the automated gathering of data from different systems in different languages already has been done. He cited a project he ran for the Internal Revenue Service in the 1990s, allowing for the information to be coa-

lesced into a common view.

As for the language issue, Ulrich said, "The fact [Murphy] believes Fortran is useless is his opinion. There are 13 million lines of Fortran code, mission-critical for financial services institutions. The whole Darwinian issue—you can't say one-off systems must die. PL/1 is small compared to COBOL, but it's big around the world. It's not our position to judge" which shall live and which shall die.

ANOTHER APPROACH?

Murphy said he's a proponent of application portfolio management, using existent impact analysis tools, as a better way to solve the problem. The market, he said, has proved that the "sausage grinder" approach—COBOL in, Java out—has failed. "Service orientation is the answer to the CORBA-Java problem," he claimed. "Wrapping screens always has been a 'hold-your-nose' deal, but those 3270 screens are closely aligned to business functions."

Ulrich, though, claimed that simply wrapping screens and creating Web services in different parts of an organization won't help it gain any efficiency. "Then, you're just propagating the problem." He said that assuming systems don't need to change and that organizations only need impact analysis tools "is wrong. If wrapping doesn't fulfill the need, or you can't rewrite [a piece of code], then this could be an alternative."

Ulrich did acknowledge that his OMG task force is changing its name due to an apparent misconception as to what legacy transformation means. "We're not restricting it to COBOL," he said.

The new name that the group decided is less ambiguous is the Architecture-Driven Modernization group. You be the judge. ■

David Rubinstein is editor of SD Times.

INDUSTRY WATCH



DAVID RUBINSTEIN

PC Shipments to Reach Record Levels

One of the early indicators of the technology recession was a decline in the sales of new personal computers. According to International Data Corp.'s Worldwide Quarterly PC Tracker, that's starting to change.

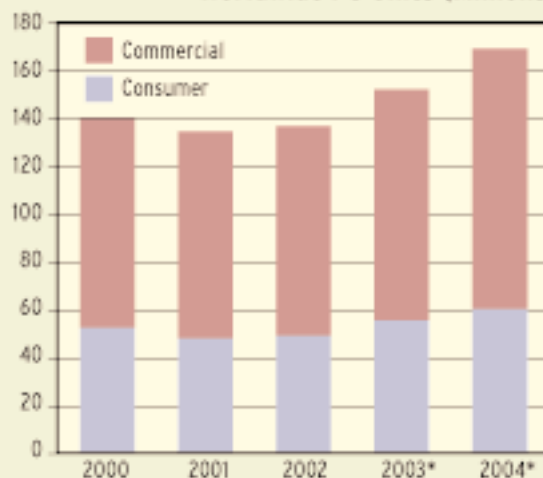
IDC's latest numbers, released last month, project that strong demand from the consumer segment, aggressive pricing and rapid portable adoption would continue to drive worldwide PC growth in the fourth quarter of 2003 and into 2004.

Further, strong third-quarter results and projected growth of 15.3 percent in the fourth quarter, again according to IDC, are expected to boost annual growth of worldwide PC shipments to 11.4 percent, an increase from prior growth projections of 8.4 percent.

Total shipments in 2003 are now expected to surpass 152 million with value flat at just over US\$175 billion. The updated projections represent shipment growth of 8.8 percent over 2000, the previous highest year for PC shipments, with a 22 percent decline in total value due to aggressive pricing and a shift toward lower-end configurations as overall computing power increases.

DATA WATCH

Worldwide PC Units (Millions)



* Forecast data Source: International Data Corp., December 2003

BUSINESS BRIEFS

Oracle Corp. announced second-quarter 2003 revenues of US\$2.5 billion while net income was \$617 million. Revenues were up from the \$2.3 billion reported for the same quarter in 2002. Earnings per share for the 2003 quarter were 12 cents, the company reported, compared with 10 cents per share for the same quarter a year earlier. New software license revenues were \$849 million, while license updates and product support generated \$1.1 billion.

... **TIBCO Software Inc.** has reported fourth-quarter 2003 revenues of US\$73 million, and a GAAP net income of \$7.6 million, or 3 cents per share. The company said its license revenues were \$40.1 million. ■

CALENDAR OF EVENTS

LinuxWorld Conference & Expo Jan. 20-23

New York
IDG WORLD EXPO
www.linuxworldexpo.com

Lotusphere 2004 Jan. 25-29

Orlando, Fla.
IBM CORP.
www.lotus.com/lotusphere

Oracle AppsWorld Jan. 26-29

San Diego
ORACLE CORP.
www.oracle.com/appsworld

Black Hat Windows 2004 Jan. 27-30

Seattle
BLACK HAT INC.
www.blackhat.com

Developing Secure Applications Jan. 28

DEVELOPMENTS INC. & SD TIMES
www.develop.com/webinar

EclipseCon Feb. 2-5

Anaheim, Calif.
OBJECT MANAGEMENT GROUP INC.
www.eclipsecon.org

Web Services On Wall Street Feb. 3-4

New York
LIGHTHOUSE PARTNERS INC.
& FLAGG MANAGEMENT INC.
www.webservicesonwallstreet.com

Emerging Technology Conference Feb. 9-12

San Diego
O'REILLY & ASSOCIATES INC.
conferences.oreillynet.com/etcon

Intel Developer Forum Feb. 17-19

San Francisco
INTEL CORP.
www.intel.com/idf

TI Developer Conference Feb. 18-20

Houston
TEXAS INSTRUMENTS INC.
www.ti.com/tidc04prbox

For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

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